



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Log 2042

Date: August 9, 1989
In reply refer to: A-89-78

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On January 28, 1988, an Aerospatiale AS350B helicopter, N26TM, crashed during an attempted takeoff from a hospital helipad in Omaha, Nebraska. ^{1/} The helicopter, configured for emergency medical service, was being moved from the helipad to allow the landing of a similar helicopter with a patient aboard. The pilot reported that engine start and pre-takeoff checks with rotors turning were normal. Immediately after lift-off and during a right hovering turn into the wind, however, the nose of the helicopter pitched upward to near vertical; input of corrective cyclic control had no effect. The helicopter crashed tail low near the helipad after the main and tail rotor blades struck a perimeter fence and wind sock pole. The pilot and passenger received minor injuries. Ground impact and a postcrash fire caused extensive damage to the airframe. Before the flight, the helicopter had been parked overnight on the helipad during a freezing rain. Air temperature at the time of the accident was 13 °F.

The mechanical portion of the flight control system was examined after the accident by Safety Board investigators; no discrepancies were revealed. The investigators noted, however, that of the three flight control servo actuators for the main rotor system, the fore/aft servo was the only one without a protective cover over its distributor valve. Discussions with the helicopter manufacturer concerning the covers revealed the following information. Between 1979 and 1983, 11 incidents of servo malfunctions were reported to Aerospatiale. Of the 11, 9 were found to have been caused by ice forming within the distributor valve housing during cold weather operations. As a result, the manufacturer began installing protective covers on the distributor valves before delivery of the helicopters and also issued three service bulletins recommending installation of the covers in helicopters in service: SB67-05 for helicopter models AS 350B, 350C, and 350D; SB67-01 for model AS 355E; and SB67-07 for models AS 355F and AS 355F1. The service bulletins were issued between April 1982 and February 1985. Aerospatiale estimates that as many as 500 servo units of the 1,400 now in service are not modified. The Safety Board understands that helicopters with Canadian registry must have these covers installed before delivery.

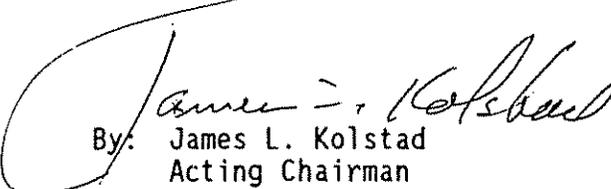
^{1/} For more information, read Field Accident Brief No. 40 (attached).

The Safety Board believes that installation of the distributor valve protective covers should be made mandatory on all Dunlop, Air Equipment, and SAMM servo actuators installed on Aerospatiale AS 350 and AS 355 model helicopters to prevent water entry and to improve the helicopter's airworthiness during cold weather operations.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Issue an airworthiness directive requiring that distributor valve protective covers be added to all flight control servo actuators installed on Aerospatiale AS 350 and AS 355 model helicopters. This modification should be accomplished in accordance with Aerospatiale Service Bulletins 67-05 and 67-01 dated April 30, 1982, and Service Bulletin 67-07 dated February 22, 1985. (Class II, Priority Action) (A-89-78).

KOLSTAD, Acting Chairman, BURNETT, LAUBER, NALL, AND DICKINSON, Members, concurred in this recommendation.


By: James L. Kolstad
Acting Chairman

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 40 1/20/88 OMAHA/NE A/C Res. No. N26TH Time (Lcl) - 1710 CST

---Basic Information---

Type Operating Certificate-ON-DEMAND AIR TAXI
Type of Operation -POSITIONING
Flight Conducted Under -14 CFR 91
Accident Occurred During -HOVER
Aircraft Damage DESTROYED
Fire ON GROUND
Crew Pass
Fatal 0
Serious 0
Minor 2
Injuries None
None 0
0 0

---Aircraft Information---

Make/Model - AEROSPATIALE AS-350B
Landing Gear - SKID
Max Gross Wt - 4300
No. of Seats - 3
End Make/Model - TURBOMECA ARRIEL 1B
Number Engines - 1
Engine Type - TURBOSHAFT
Rated Power - 680 HP
ELT Installed/Activated - YES/YES
Stall Warning System - NO

---Environment/Operations Information---

Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- 350/016 KTS
Visibility - 15.0 SM
Lowest Sky/Clouds - 2000 FT SCATTERED
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DUSK
Itinerary
Last Departure Point
SAME AS ACC/INC
Destination
LOCAL

---Personnel Information---

Pilot-In-Command
Certificate(s)/Rating(s)
COMMERCIAL
Age - 39
Biennial Flight Review
Current - YES
Months Since - 1
Aircraft Type - AS-350B
Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT
Flight Time (Hours)
Total - 2455
Make/Model- 419
Instrument- UNK/NR
Multi-Eng - UNK/NR
Last 24 Hrs - 1
Last 30 Days- UNK/NR
Last 90 Days- 31
Rotorcraft - 2455
Airport Proximity
OFF AIRPORT/STRIP
Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

---Instrument Rating(s) - HELICOPTER

---Narrative---

THE PILOT PICKED THE AIRCRAFT UP TO A HOVER AND MADE A HOVERING TURN IN PREPARATION FOR DEPARTURE, THE NOSE OF THE AIRCRAFT BEGAN TO RISE. THE PILOT STATED LATER THAT HE COULD NOT CONTROL THE AIRCRAFT. THE AIRCRAFT BEGAN TO DESCEND AND THE TAIL ROTOR STRUCK A SECURITY FENCE AROUND THE HELIPORT, THE MAIN ROTOR THEN STRUCK A WIND SOCK POLE, A TREE, LIGHT POLE, AND CONCRETE BENCH DURING THE ACCIDENT SEQUENCE. THE ACCOMPLISHMENT OF THE MANUFACTURER'S SERVICE BULLETIN (SR) #67-05 HAD BEEN PARTIALLY COMPLETED. THE SR PROVIDED FOR PROTECTION AGAINST ICE IN THE HYDRAULIC SERVO BY INSTALLATION OF PROTECTIVE COVERS. THE PROTECTIVE COVERS HAD BEEN INSTALLED TO PROTECT THE OTHER TWO MAIN ROTOR SERVOS BUT NOT THE SERVO WHICH CONTROLLED FORE AND AFT CYCLIC CONTROL. THE OMAHA AREA EXPERIENCED FREEZING PRECIPITATION THE NIGHT BEFORE THE ACCIDENT, THE TEMPERATURE HAD NOT RISEN ABOVE FREEZING DURING THE DAY, AND FREEZING PRECIP WAS FORECAST. THIS WAS THE FIRST FLIGHT OF THE DAY FOR THIS ACFT.

Brief of Accident (Continued)

File No. - 40 1/20/88 OMAHA, NE A/C Reg. No. N26TH Time (Lcl) - 1710 CST

Occurrence #1 AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation HOVER

Findings(s)

1. WEATHER CONDITION - ICING CONDITIONS
2. ROTORCRAFT FLIGHT CONTROL SYSTEM, PRIMARY SERVO - ICE
3. MAINTENANCE, SERVICE BULLETINS - NOT FOLLOWED - COMPANY/OPERATOR NGHT
4. AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

Occurrence #2 LOSS OF CONTROL - IN FLIGHT
Phase of Operation HOVER

Findings(s)

5. CYCLIC - RESTRICTED -
6. AIRCRAFT CONTROL - NOT POSSIBLE -

Occurrence #3 IN FLIGHT COLLISION WITH OBJECT
Phase of Operation HOVER

Findings(s)

7. OBJECT - FENCE
8. OBJECT - POLE
9. OBJECT - TREE(S)

-----Probable Cause-----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 2,4

Factor(s) relating to this accident is/are finding(s) 1,3,5,7